Install Velocity Tubing Strings

Partner Reported Opportunities (PROs) for Reducing Methane Emissions

PRO Fact Sheet No. 704

Applicable sector(s):

☒ Production ☐ Processing ☐ Transmission and Distribution

Partners reporting this PRO: TotalFinaElf (now Total)

Other related PROs: Install Plunger Lift Systems in Gas Wells, Use Foaming Agents

Compressors/Engines	☐
Dehydrators	☐
Pipelines	☐
Pneumatics/Controls	☐
Tanks	☐
Valves	☐
Wells	☒
Other	☐

Technology/Practice Overview

Description

When the gas flow velocity is not sufficient to lift reservoir liquids, the liquids will choke gas flow. This is commonly remedied by venting the well to the atmosphere to expel liquids to a surface separator and restore gas production. One partner reported reducing the methane emissions associated with frequent well blowdowns through the use of velocity tubing strings.

Velocity tubing strings reduce the cross-sectional area of flow, increasing the flow velocity and achieving liquid removal without blowing methane to the atmosphere. Generally, a gas flow velocity of 1,000 feet per minute is necessary to remove wellbore liquids.

Methane Savings: 4,680 Mcf per year

Costs

Capital Costs (including installation)

☐ <$1,000 ☐ $1,000 – $10,000 ☒ >$10,000

Operating and Maintenance Costs (annual)

☐ <$100 ☒ $100-$1,000 ☐ >$1,000

Payback (Years)

☐ 0–1 ☒ 1–3 ☐ 3–10 ☐ >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Operating Requirements

To install a velocity tubing string, a well workover unit is required to remove the existing production tubing and position the new, smaller diameter string in the well.

Applicability

Velocity tubing strings are appropriate for natural gas wells with relatively small liquid production and higher reservoir pressure.

Methane Emissions Reductions

Methane emissions occur due to the repeated blowing of gas production wells to the atmosphere to expel liquids. Reported methane emissions reductions are based on a partner reported elimination of bi-weekly liquid unloading at a rate of 180 Mcf per well.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 4,680 Mcf per year apply to eliminating well blowdowns conducted bi-weekly per well.

Discussion

This technology can provide payback in less than three years. Capital costs will include the use of a work-over rig and crew for one day and the purchase of smaller production tubing. These costs should be offset by the reduced emissions, increased production, extended well life that the new tubing will provide, and salvage value of the tubing string removed.